

WHAT IS CLAIMED IS:

1. A method of manufacturing a gas storage tank for storing a gas, said manufacturing method comprising:

5 providing a hollow filling unit and a metal outer wall member that is configured to receive said filling unit therein;

filling said filling unit with a gas absorbent/adsorbent for absorbing and/or adsorbing the gas;

10 attaching a detachable cover member to said filling unit to block up an opening of said filling unit filled with the absorbent/adsorbent, and placing said filling unit filled with the absorbent/adsorbent in said outer wall member through an opening formed in said outer wall member;

narrowing the opening of said outer wall member after the placement of said filling unit in said outer wall member;

15 heat-treating said outer wall member with the narrowed opening under water cooling; and

detaching the cover member from said filling unit housed in said outer wall member after the heat treatment and connecting inside of said filling unit with outside of said outer wall member via the narrowed opening of said outer wall member, so as to allow for storage and release of the gas into and from the absorbent/adsorbent.

2. A manufacturing method in accordance with claim 1, wherein said gas storage tank stores hydrogen,

25 the absorbent/adsorbent includes at least a hydrogen storage alloy, and

said outer wall member is composed of an aluminum-containing metal.

30 3. A manufacturing method in accordance with claim 2, wherein

said filling unit includes a fin structure interiorly, wherein the fin structure comes into contact with the absorbent/adsorbent.

4. A manufacturing method in accordance with claim 3, wherein  
5 said filling unit includes the fin structure interiorly, wherein the fin structure is formed by laminating multiple thin plate members having through holes, and

the absorbent/adsorbent is filled into gaps, wherein the gaps are formed between the multiple thin plate members in said filling unit and  
10 are mutually connected via the through holes formed in the multiple thin plate members.

5. A manufacturing method in accordance with any one of claims 1 through 4, wherein said filling unit comprises a coolant channel,  
15 through which a coolant flows,

said manufacturing method further comprising:

connecting the coolant channel with the outside of said outer wall member via the narrowed opening to supply and discharge the coolant to and from the coolant channel.

20 6. A gas storage tank for storing a gas, said gas storage tank being manufactured by a manufacturing method in accordance with any of claims 1 through 4.

25 7. A gas storage tank for storing a gas, said gas storage tank comprising:

a tank having an opening formed on at least one of two ends thereof;

a filling unit that is housed in said tank; and

30 a support member that is arranged between said tank and said

filling unit and holds said filling unit in said tank to connect a whole gap formed between said tank and said filling unit with the opening.

5 8. A gas storage tank in accordance with claim 7, wherein said filling unit is filled with an absorbent/adsorbent for absorbing and/or adsorbing the gas.

9. A gas storage tank for storing a gas, said gas storage tank comprising:

10 a filling unit that is filled with an absorbent/adsorbent for absorbing and/or adsorbing the gas;

a tank that has two ends aligned along a longitudinal axis thereof and an opening formed on at least one of the two ends and houses said filling unit inside thereof; and

15 a support member that is formed by multiple thin wavelike shaped plates arranged substantially in parallel with the longitudinal axis of said tank and has two open ends aligned along a longitudinal axis of said support member, said support member forming a gap between said tank and said filling unit to connect with the opening, while  
20 holding said filling unit in said tank, wherein the outside of said support member comes into contact with said tank and the inside of said support member comes into contact with said filling unit.

25 10. A gas storage tank in accordance with either one of claims 8 and 9, wherein said tank has a narrowed element of a smaller cross sectional area at the opening formed on at least one of the two ends.

11. A gas storage tank in accordance with claim 10, wherein said tank has two openings on the two ends to face each other.

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12. A gas storage tank in accordance with claim 11, wherein said tank has a quasi-cylindrical shape, and

5       said support member is formed by a thin wavelike shaped plate arranged substantially in parallel with a longitudinal axis of the quasi-cylindrical shape.

13. A gas storage tank in accordance with claim 12, wherein said gas storage tank stores hydrogen,

10       the absorbent/adsorbent includes at least hydrogen storage alloy, and

      said tank is composed of an aluminum-containing alloy.

14. A gas storage tank in accordance with claim 13, wherein said support member is made of a metal.

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15. A method of manufacturing a gas storage tank for storing a gas, said manufacturing method comprising:

      placing a filling unit in a tank having at least one opening;

20       arranging a support member between said filling unit and said tank to connect a whole gap formed between said tank and said filling unit with the opening; and

      heat-treating said tank under water cooling, after the placement of said filling unit and the arrangement of said support member.